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ORIGINAL ARTICLES.

DENTAL STIGMATA OF SYPHILIS AND TRANSILLUMINATION IN THE DEMONSTRATION OF HUTCHINSON'S TEETH.*

By J. W. Charles, M.D.,
ST. LOUIS, MO.

Hutchinson, the syphilographer, was not only the first to call the attention of ophthalmologists to inherited syphilis as a cause of parenchymatous keratitis; but, according to Arlt, he wished to refer "all cases of interstitial keratitis to inherited syphilis." He was the first to recognize the significance of the notched permanent incisor teeth so frequently seen in children with parenchymatous keratitis, and his lead has been followed by medical men and especially by ophthalmologists to the present time. To quote from Arlt: "The state of the permanent incisors is pathognomonic of this disease, if their edges are not rectilinear or slightly convex, but concave."

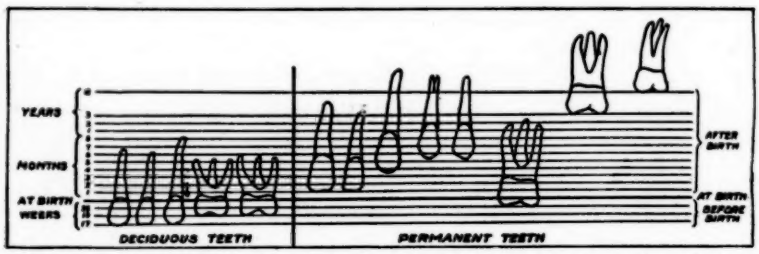
The medical profession still regards notched incisors as pathognomonic of lues, in spite of the discovery by the dental pathologists that a loss of nutrition at the time of the laying down of the enamel, an epiblastic structure, may occur from other causes, such as the acute exanthemata, on the ground that the acute exanthemata almost never occur within the first few weeks or, indeed, months of infancy.

The text-book of Dental Pathology and Therapeutics of Burchard and Inglis states: "During the first few weeks after birth skin eruptions characteristic of hereditary syphilis are apt to occur in the contaminated child. At this period the enamel

*Read at the January meeting of the St. Louis Ophthalmological Society.

of the tips of the permanent incisors is undergoing development and the effect of the eruption is to cause a defective development at this point. Instead of the normal angles and flattened curves of the labial surfaces, the incisors may have a roughly rounded and stunted appearance. The incisal edge of the tooth is narrower than its neck. The enamel at this edge is irregularly and badly formed, but there is a semblance of the three enamel tubercles found normally. The middle tubercle being composed of defective enamel is soon lost by abrasion, causing the tooth to have a notched appearance."

On the other hand, Black's Pathology of the Hard Tissues of the Teeth (from his Operative Dentistry), states another view: "It has formerly been supposed that the middle lobe has failed of formation, resulting in this peculiar scar, but more recent investigation seems to show that the whole incisal edge has failed in most of these cases, and that the angles of the tooth have been



The time of the inception of calcification (dentinification) of the teeth.—(Stein.)

drawn together over the injury, giving the outline of the tooth this rounded appearance. Certainly many of these teeth are much shorter than normal. Generally an ugly deformity of the occlusal surfaces of the first molars accompanies this type. In the molars little spiculæ of cusps are likely to be sticking up much too close together, while the rest of the occlusal surfaces are much too small, crumpled together and sunken into the crown, which other than this will be of full size and form. These teeth decay quickly in case there is a tendency to caries in the individual."

Stein ("Syphilitic Hypoplasia of the Teeth," *Dental Cosmos,* July, 1913) considers hypoplasia as taking first place among the stigmata of syphilis: "It appears in 39 to 47 per cent. of cases, according to such an authority as Fournier, who maintains that 80 per cent. of all cases of hypoplasia are caused by syphilis."

It will be seen from a developmental chart of the teeth that the first molars are the only teeth which have begun to calcify at birth, the incisors during the first few weeks after birth, the canines in the third to the fourth month, the bicuspids in the sixth month, the second molars in the third year, and the third molars in the twelfth year.

"The dentin always begins to form at the summits of the dental papillæ, so that the dentine caps are formed before amelification takes place. . . Later on, dentinification and amelification proceed synchronously." "The process of dentinification, which is remarkably regular, proceeds from the summit of the papillæ, and gradually forms the crown, neck and root." (Stein.)

Hypoplasia of the four permanent first molars must take place in the last three months of intrauterine life through the first few months of infancy. "In infancy and adolescence two-thirds or three-quarters of each tooth, nearer its morsal surface, is hypoplasic, diminished in all its diameters, eaten away, and marked off from the rest of the tooth by a circular constriction so that there appears to be a small stump-like tooth—a stump of undeveloped dentin—emerging from the remaining, apparently normal, crown. This surface is extremely irregular, with rough, conical, pointed eminences, which are at times markedly anfractuous, exhibits fissures which are more or less deep and penetrate even the dentin, and has a yellow, brown, dirty gray, or black appearance. This hypoplasic stump, partially covered with enamel, is gradually worn away and crumbles to pieces, so that it finally disappears, and, with the crown of the tooth thus shortened, the morsal surface becomes flat, yellow, and surrounded by a zone of white enamel. This symmetrical hypoplasia of the four teeth is of the greatest importance in the diagnosis of heredo-syphilis. There may be hypoplasia of the crowns of the first molars or caries of the center of the remainder of three or four first molars, or a loss of some or all through caries or a combination of these conditions in the first molars." (Stein.)

Take the case of a syphilitic infection most intense at the fourth month after birth. "Calcification of the deciduous teeth having already taken place, no evidences of syphilis will be seen upon them. But because, at this time, only about 1.5 to 2 mm. of the crowns of the incisors have undergone dentinification, the stigmata will, after the eruption of these teeth, be evident on them and at the same level, viz., 1.5 to 2 mm. up on the crowns. Dentinification of the canines is beginning at this period, conse-

quently the summit (about 1. mm.) of these four teeth will be affected. The bicuspids will not yet be affected, as dentinification has not yet begun. But the first molars, at the fourth month after birth, have considerable dentin (one-half or two-thirds) formed for their crowns, consequently the lesions will appear about half-way up, or two-thirds the way up, on the crowns of these teeth." (Stein.)

The second and third molars would not be affected because of their later dentinification. The cuspids, developing about the fourth month of infancy, are occasionally peg-shaped with defective enamel at their apices.

Modern pædiatricians seem to regard Hutchinson's teeth of great significance but not absolutely pathognomonic:

In the pædiatric clinic in Berlin, from 1890 to 1905, Oberwald found 701 heredo-syphilitic children. Among 61 over 7 years old 20, or 33 per cent., had Hutchinson's teeth. (*Dental Cosmos.*)

In the *Dental Cosmos* of 1911, there is an abstract from an article in the *Zahnaertzliche Zeitung* showing that in 4,073 cases of hereditary syphilis only 182 had dental stigmata, i.e., only 4.46 per cent.; only 113 or 2.89 per cent. showed Hutchinson's teeth.

Veeder and Jeans (*American Journal of Diseases of Children,* October, 1914) reported only three cases of notched permanent incisors among forty-eight syphilitic children, but they found ill-shaped and deformed teeth common. "They were usually small and peg-shaped with broken, irregular surfaces and were separated widely from one another and without good alignment. We have also observed typical Hutchinson's teeth in a non-syphilitic patient."

Jeans, in the October, 1916, number of the *American Journal of Diseases of Children,* "Clinical Signs and Diagnosis of Late Hereditary Syphilis," states that "from the standpoint of frequency Hutchinson's teeth is not a valuable sign, though when present constitutes good, but not absolute, evidence of an early infection. The presence of two, widely spaced, instead of four upper incisors is very suggestive, especially if these are pegged or otherwise misshaped. A characteristic deformity of the first molars has been described by Moon. These teeth are reduced in size and are dome-shaped, through the dwarfing of the central tubercle of each cusp."

Since my appointment as consultant at the Missouri School for the Blind, I have been much interested in those cases of paren-

chymatous keratitis and optic atrophy which have occurred with or without other stigmata of syphilis. In this connection with the aid of Dr. Chase our dentist and Dr. Lamb, my associate in that work, the condition of the teeth of all pupils in the school has been investigated.

Having noticed several cases of Hutchinson's teeth in which only one central incisor was notched, we became interested in seeking evidence of malnutrition in the teeth which had not in ordinary light exhibited any abnormality, and especially in those pupils who exhibited other signs of congenital or hereditary lues. The ordinary ever-ready light placed behind the incisors furnished a very satisfactory transilluminator. By this method, in several cases of suspected syphilis, we found not only that the companion tooth of a notched incisor was affected by a disturbance in amelification of such a kind that the normal enamel could be distinguished from the abnormal, but also that occasionally there was a case in which no notching had appeared in either tooth—cases which would never formerly have been called "Hutchinson's"—which showed this area of deficient enamel, or traversed by alternate lines of normal and deficient enamel.

One case in mind is that of a girl of thirteen with parenchymatous keratitis, rhagade-lines and one notched incisor. The other incisor by transillumination shows imperfect development at the center of the enamel at the cutting edge. The Wassermann gave a four plus (blood) and a negative spinal, and probably intensive treatment will protect her from future disaster. Her first course in intensive mercurial treatment resulted at the St. Louis Children's Hospital in a slight corneal reaction, the second in faucial ulcers.

A boy 10 years old was recently admitted congenitally "blind" with central chorioretinitis and temporal chorio-retinal spots with optic atrophy. His pupils were small and barely reacted to light. There was rapid lateral nystagmus. V=23/240, R. or L. His right central incisors are typical Hutchinson's; the left central incisor shows a disturbance in the enamel brought out by transillumination. The upper permanent first molars are deficient in enamel with smooth, rounded cusps.

The blood Wassermann was positive and the spinal fluid negative. This case will also be placed under intensive treatment which will be instituted gradually in order to avoid a possible Herxheimer in the chorioid or retina.

SUBCONJUNCTIVAL INJECTIONS OF MERCURY CYANIDE IN OCULAR THERAPY.*

By E. L. Jones, M.D.,
CUMBERLAND, MD.

Before proceeding with the paper, it is my desire to thank the chairman for the courtesy of his invitation that I read a paper before this honorable body on the subject he has assigned to me.

About nineteen years ago, in the near-by city of Atlanta, a paper was read before the Ophthalmic Section of the American Medical Association by Dr. E. J. Bernstein, now of Kalamazoo, Mich., on the subject of subconjunctival injections, which went thoroughly into the literature up to that time and quoted a large array of authorities. Likewise, scattered through current literature for many years past, have been references to using various drugs by injection under the mucous covering of the eyeball; but the practice, as a whole, did not become very general until the adoption of the use of the normal saline. The question has several times been asked the essayist as to how he happened to take up the injections of mercury cyanide in such quantities as to produce the terrible appearing reaction which, seen for the first time, usually causes the author and creator of such a condition to say, if he escapes calamity this time, it will be with him: "Never—no, never—again."

To rob this communnication of all formality, a little personal history will be injected. In 1903, feeling that there was a field of effort in which I had not entered, and having nothing systematic at my command on the subject of injections, to which so many references were beginning to be made in current literature, I purchased a copy of Darier's "Ocular Therapeutics," hoping therein to find the enlightenment desired. A few chapters were read; and while much of it was entirely new, it struck me as being so bizarre in claims that serious doubts as to dependability of the same were entertained by me, and the book was put aside as one more addition to the literary "curiosity shop."

Some months later, after reading several articles in current literature on dionin, which was to me an unknown agent, some dionin was obtained; and its strikingly individualistic action, as characteristically specific as that of cocain or adrenalin when they were first introduced, impressed me greatly and caused me to

*Read before the Section on Eye, Ear, Nose and Throat at the annual meeting of the Tennessee State Medical Association, April, 1916.

refer to Darier to see if he described these things. Not only did he describe them exactly, but it also appeared that he was largely instrumental in introducing the drug into ocular therapy. This caused a revival of interest in his other teachings; and, as it so happened, several bad cases of diseased or injured eyes presented themselves not long after. His injection practices were applied with much expectation, which the results obtained fully justified. His steps were followed until they faded out, and then a few steps were taken where there was no path, and it is my sincere hope that any one else following these tracks will not be led into error or trouble.

Previous users of the hollow needle seemed to desire to place a drug in a situation where it could not run out, using mostly weak bichloride from one to five drops, expecting therefrom the specific effect of such drug. Later, salt solution was adopted, as being free from the pain and reaction of the bichloride. Instead of seeking to avoid the reaction, it should be encouraged by a large and irritant injection, as it is the increased lymph flushing, in my belief, that opens up the greatest possibilities as yet attained in the battle we are fighting against disease or sepsis. This idea, in a broad way, seems to have been given a great impetus by the teachings of Sir Almroth Wright and others in connection with the British Army service in the present European war, wherein extensive wounds and lacerations have healed faster under abundant saline dressings, the Dakin or hypochlorite lavage, or the packs with salt in gauze to make solutions as the lymph is created by the salt irritant. This lymph washes outwardly and is sterilized by antiseptics externally. The lymphatic system, when working up to full capacity, is nature's greatest healer. It is due to this, and not to mercury or cyanogen as such, that the cyanide injections produce their good effect. No doubt there are many other means of producing this reaction equally as efficient, but my opportunities are too limited to undertake experiments along other lines. To bichloride, which has been so much referred to in our literature, the objections are, when compared to cyanide: It is much more painful, more toxic, and incompatible with all the alkaloids, as a rule, which may need to be used with it.

It has not been my practice to use injections in cases which I believed could be cured equally well without this procedure, although it might take much longer to do so by the usual means. For instance, a corneal ulcer which is peripheral, unless of a viru-

lent type of infection, might be treated for several weeks, when, by an injection, its cure might be counted on in a few days, inasmuch as a peripheral scar does no harm to vision. But if the ulcer threatens to perforate or is central, where the least scarring is so detrimental to vision, its use is recommended as a first measure in any destruction of substance involving the true cornea—not in epithelial exfoliation. Likewise, in low grade choroiditis, or violent choroiditis, if it can be proved that the affected spot is far removed from the macular area, the case may be allowed to run its course under the usual treatment by mercury or iodides. In my belief, this does nothing toward saving the spots already inflamed, but increases the resistance of the uninvolved area against further spread. But, given a case of macular choroiditis before destruction has taken place, it is my belief the only thing that can be depended on to save the reading vision is a massive cyanide injection, which will restore central vision that has been obscured as much as three to four weeks—not much after that time. Also in choroiditis where the fundus cannot be seen to exclude the macula from involvement, the injection should be made on the assumption that it is involved. The same should be done in that form of hæmorrhage at the macula only when not due to Bright's disease. In penetrating wounds of the anterior chamber, where infection is likely to occur, and in all cases where the ciliary body or vitreus are known to have or are even remotely suspected to have been entered, the injection should be immediately made, as infection of the vitreus is a matter of only a few hours and its mischief cannot be undone. Several very remarkable observations, however, have been made of the power of the treatment to check vitreous suppuration in panophthalmitis, causing the pus to be limited to an area which, after discharging itself through an original wound or scleral perforation, permitted the volume of the eyeball to be preserved almost in its full size, the pain and symptoms of sepsis subsiding in any event in an astonishingly short period. The swelling of the panophthalmitis, added to the swelling of an injection, however, would give almost a fatal shock to one who had not gotten pretty familiar with swellings previously.

Several previous papers have gone into the details of the composition of the injection, and many have asked the formula of the same, but my usual answer is that any one may use almost any formula, so long as he produces a sufficiently intense reaction. The basis is cyanide of mercury ranging from 1-5000 to 1-1000,

of which two cubic centimeters, or half a dram, should be used, my standard of 1-1500 being purely arbitrary, but always adhered to. To this is always added some acoin to lessen the pain. As acoin is precipitated by the slightest trace of alkalinity, a little boric acid is put in, and also a little salt, these three being ready mixed. To relieve the pain, not of, but following, the injection, from ⅛ to ¼ grain of morphin is added, according to whether the eye is not or is already tender or painful. Generally about ¼ grain of dionin is also added, by which time the solution is about as concentrated as the water will stand. In tuberculous cases the water used is saturated with guiacol, of which it will dissolve about 2 per cent. One prerequisite is long-continued and free use of cocain, some of which is also always put in the unoperated eye. The duration of the pain following the injection does not average over twenty minutes in eyes not previously painful, but ranges from the extremes of a child permitting injections in both eyes in a bad case of double interstitial keratitis, without moving a muscle of the body or face or making the slightest moan, up to an adult howling from its use in one eye. It was formerly thought children required a general anæsthetic; but where a reasonable amount of self-control is present, this may be dispensed with. In an eye with increased tension, local anæsthesia is very poor and the ensuing pain correspondingly great. Where glaucoma is a complicating condition or a primary affection, a few drops of adrenalin are used instead of the dionin, and the basic solution may be 5 per cent. sodium iodate, which Darier asserts reduces tension. While I have used it a number of times, it is done because of his authority and not knowledge on my part of how it acts or whether it is better omitted.

The conditions for which injections have proven more efficient than other established means of treatment are: Traumatisms by contusion, producing vitreous hæmorrhages of severe degree; dislocation of lens into the vitreus; deeply penetrating wounds by shot, gravel, coal, nails, and operative instruments, etc.; ruptured cornea; various forms of protracted phylctænular ulceration; severe corneal ulcers, including traumatic hypopyon keratitis, protracted non-ulcerative interstitial and deep keratitis, disseminated keratitis, iridocyclitis in early stages, choroiditis, syphilitic optic neuritis, after many operative procedures, as capsular discission, magnet operations, etc., galvano puncture, in retinal detachment, and in conjunction with established treatments not in themselves sufficiently sure, as curettement and cautery of rodent

ulcer of cornea and any post-operative infection, as after cataract extraction.

My experience in lid trouble has been too restricted to make assertion of, although I have long believed it would be good in certain intractable chronic inflammations. It has been used a few times in trachoma connected with corneal ulceration, apparently with good result, leaving the tarsal conjunctiva finally pitted, as the surface of orange peel looks. For some reason, trachoma is non-existent in the section from which my work is drawn, except cases imported by foreigners, which seem to soon die out. Where the cornea is badly involved, the injection is made under the bulbar conjunctiva; but if not, the lid is everted and injection made just beyond the limit of the tarsus under the conjunctiva of the lid. Dr. Coulter, of the United States Public Health Service Trachoma Hospital at Welch, W. Va., has manifested an interest in this treatment and is now submitting it to trial. The practice of Colonel Smith, in India, of using cyanide injections for trachoma, is known to the world generally.

This treatment was applied in one very intractable case of vernal catarrh, in the person of a young boy, three summers ago. So great was his relief from the injection of the first eye that he willingly submitted to the same in the other eye a short time after; and the manifestations of itching and redness, as well as the typical appearances, have been very much lessened ever since.

With so few exceptions as to make them negligable, my cases have all been office patients, in most instances returning to their homes, sometimes considerably distant, or going to friends or relatives nearer, within an hour or less from the time of treatment, having a cotton and gauze covering over the eye to hide it from the sight of others and take up the overflow of tears. A certain percentage of people have a morphin sickness, with vomiting, which detains them longer, maybe half a day, and then some after they get back home or into bed; but they would be sick just the same from morphin administered for any other reason. No speculum or forceps is needed, the needle simply pushing up a little fold of conjunctiva as far from the cornea as possible in any space midway between the ocular muscles, after which a slight jab sends it under. Inject a few drops; and as the membrane bulges push the needle deeper as the injection proceeds. After some practice, aside from proper placing of the needle, the thing could be done by feeling without the aid of sight.

You will not be burdened with a long array of cases; but as some have questioned the permanency of good results obtained and argued that a remote interference with the well-being of the eye may take place later, leading to degeneration, a case treated nearly twelve years ago, and lately seen, will be described. In October, 1904, a man of about forty-five years of age presented himself with the entire cornea ulcerating, with nercrotic areas in it as dense as butter and apparently involving the entire thickness of the cornea. He was thin, anxious, and pallid-looking, and said he had eaten and slept but very little for several weeks and had slept but one night of the past seven. It had originated in a slight abrasion of the cornea in his work as a carpenter six or eight weeks before, which did not lay him off from work for two or three days. The severity of the infection may be inferred from the fact that the conditions found when he reported had developed in spite of efficient treatment by an expert oculist according to accepted methods. It was explained to the patient that he had arrived at a stage when the only thing to do would be to take the eye out and end his suffering, as he would have a dense leucoma if the eye was eventually healed, and it would be of no service. It was also explained to him that a new treatment, which had not as yet gained any general recognition, might induce healing, with a chance of a not too unsightly eye; but the likelihood of useful vision was negligible. He was given several injections at intervals during about four to six weeks, as my memory runs, in conjunction with actual cautery at times, and the usual atropin antiseptics, hot bathing, etc., finally healing entirely. When the patient dropped into the office several months afterwards, having regained his former color and weight and shaved the whiskers which are allowed to grow during sickness or suffering, he was not recognizable as the same man, except by his voice. Instead of the dense leucoma anticipated, his cornea was fairly clear; and he has ever since had sufficient sight to read print somewhat finer than ordinary newspaper and sufficient far-sight to recognize people across an average street. It is one of the merits of this treatment that regenerated corneal substance is clearer than under other methods.

It is my hope to be able to present to you a case illustrative of the use of this treatment in apparently destructive traumatism of the globe, according to my recollection of the circumstances and conditions, supplemented by that of the patient.

In March, 1909, Mr. McC., about nineteen, of Bristol, Tenn., was struck in the eye, with history as detailed in his letter:

"Abingdon, Va., March 29, 1916.

Dr. E. L. Jones, Cumberland, Md.

"Dear Dr. Jones: Sorry to be so neglectful in not giving you the information asked for in your first letter.

"The facts, as far as I can remember them, are as follows:

"My eye was injured by a door at Holston Extract Company's plant, in Bristol, February 1, 1909, swinging shut as I was entering and the latch on the door striking me in my right eye. I at once noticed the sight of the eye was impaired, but did not consult a doctor until the next A.M., when I noticed I had very little vision in that eye. Dr. C. told me, after the first glance into my eye, that the retina was detached and that there was no cure for such; also Dr. S. pronounced my case detached retina. In about six weeks you treated my eye, and at the time, you remember, I could hardly distinguish an electric light held in front of me; and inside of thirty days I could notice a gradual return of sight, which gradually grew stronger, until now I can read the finest of prints with the injured eye, in fact, can read any print with it that I can read with the other, which has always been good.

"The smallest print I am inclosing can be read with perfect ease at arm's length, and the larger twenty feet.

"Hoping this information will be of some value to you and that I can be with you Monday A.M., I am,

"Most respectfully,

"[Signed] C. P. McCormick.

"P.S.—My age at time of treatment was nineteen."

A former resident of this community, who was living in Bristol and was greatly interested in the young man's welfare, wrote a description of conditions as best he could and asked if it was likely that any good might be effected by still further efforts. As it seemed probable that this new treatment might be helpful, his coming for trial was sanctioned. On reporting for examination, his vitreus was so opaque from the old hæmorrhage that the examiner could not see into it nor the patient out of it. One injection was made, and the patient remained three or four days, during which time no change was evident. He was put on the

mercury with chalk mixture, elsewhere alluded to, and permitted to return home, to continue the powders a month or two. The sample of print inclosed as near test is fine print cut from a magazine, and the far test Snellen No. 20—apparently perfect vision far and near.

To those of you who have a troublesome case of chronic episcleritis the following narration may offer useful suggestion: In September, 1914, a frail woman, fifty-six years of age, reported with eyes that had been weak and painful for several months, due to a chronic episcleritis encircling one cornea, a zone of about 1-6 of an inch being bluish, elevated, and tender. The chronic nature of the trouble and its intractability to medical treatment was explained; but as there was no urgency, she was given a mixture of potass. iodide and sod. salicylate, and advised to return in a month for injection if not better. Owing to circumstances, etc., she did not come back for seven months, and conditions were in no wise better. After thoroughly cocainizing the eye, a series of spots was burned by actual cautery around the infiltrated circle, like spokes in a hub, and an injection given. The pain was no more than usual; but due to an idiosyncracy against morphin, she developed the worst case of vomiting I have ever seen. She could not leave the couch at the office to go to a hotel across the street until late in the day, the treatment having been given about 10 A.M.; and, in spite of free drinking of hot water to wash out the stomach, after she went to bed with a mustard plaster above the stomach and carbolated bismuth and cerium oxalate in it, vomiting did not cease until midnight. The improvement that followed was so marked and rapid, however, that at the end of a month or so, when she came back, the condition was entirely relieved. As she was preparing to remove to a distant part of another state and feared a relapse, another punctate circle of cauterization was made as a precautionary measure against relapse.

In illustration of penetrating foreign bodies with resultant inflammation, the following cases are cited.

Mr. C., a large man of forty-nine years of age, had a mine blast go off in his face, slightly scratching the right cornea and having a piece of coal the size of a large pinhead penetrate the cornea of the left eye at the root of the iris. When he came, September 24, 1915, about two weeks afterwards, the eye had iritis, and was so tender to touch and spontaneously painful that iridocyclitis was feared. He had slept very little for several

nights. The lens was cataractous, the iris bound down to the same in its entire circumference, in the center of which, imbedded in the lens, was the particle of coal. In its passage in the same plane with the iris it had removed a narrow segment of the same from periphery to center, through which the cataractous lens showed as plainly as through any pupil. He was told that iridocyclitis would probably develop and destroy the eye, and that, if it did not, extraction of the cataract would possibly end in failure, or at best, be a considerable risk to run and cause much loss of time, and he was advised to have an injection. This was given, with only slight and short pain; and, after having the eye tied up, he left the office, returning next morning, feeling perfectly free of pain and reporting the first good sleep for several nights. He returned on October 2, everything quiescent. He returned again on December 16, with the cataract completely absorbed, the fundus being clearly visible through the traumatic pupil and the coal vanished from sight somewhere. He could count fingers at 4 feet with +11 D.s vision=20/50, with +16 D. Jaeger No. 2. His other eye had only 20/30 vision. The complete absorption of the lens at this late age is most unusual.

W. C., aged eighteen, came at 5 P.M., March 15, 1916, having had his face penetrated by particles from an explosion in a shack near a coal mine about 12 M., due to nine dynamite caps getting accidentally fired. The upper lid of the right eye had a cut through the skin, showing muscle tissue protruding, and the eye a linear cut 1-10 inch long in the sclera near the outer corneal margin. Vision was reduced to partial counting of fingers at half a foot; tension reduced, and depth of eye could not be seen into until after the pupil was dilated, when the upper portion of the vitreus was observed to be filled by dense hæmorrhage, with sharply defined, as against diffused, border. As the vitreus had in it almost beyond doubt, a nonmagnetic foreign body, which could not by any possibility be removed and which would soon likely cause destructive inflammation, the usual injection of cyanide, dionin, and morphin was given, causing severe suffering, which subsided in twenty minutes, but was followed by morphin sickness and vomiting when he started to leave shortly after six. This abated soon, and he went to his home in a nearby town, returning on the 18th. There had been no pain; the eye was not tender; and a glimpse of the pupil through swollen lids showed it clear, with ability to count fingers at about two feet.

He came again on the 20th, able to open the lids a little; no pain or tenderness; counts fingers at five feet. Ophthalmoscope shows haze throughout the vitreus from diffused blood. To aid in absorbing this, I gave a prescription used for many things, containing one grain each of mercury, with chalk, Dover's powder, carbonate of iron, and aromatic powder compound, three times a day. March 23: He has no pain or tenderness; anterior segment of eye perfectly clear, still too much diffused with blood and floating particles to see fundus. Next visit, March 25: No pain, tenderness, or inflammatory redness. Counts fingers at ten feet. Vitreus still too hazy from blood remnants to permit view of fundus. Patient last seen on March 31. V=20/100. With dilated pupil, the vitreus showed black from blood pigment; and only when looking up could a red reflex be gotten at the bottom of the eye. The retina must be perfect to see so well through such dense opacity, which will absorb in time.

That penetrating, non-recoverable foreign bodies still present the almost hopeless outlook accorded them in the past is testified to by the discussion on injuries to the eye in warfare before the Ophthalmological Society of the United Kingdom for 1915; and, furthermore, the ultimate loss of many of those from which a magnetic body is removed by subsequent detachment of the retina, although they are at first apparent successes, is brought out in the discussion on detachment of the retina by Mr. Gustavus Hartridge. Hence, if the trial on an extended scale should prove that an injection at the time of injury or operation so tones up the eye as to enable it to resist these degenerative changes, a great step forward will have been taken.

The following case, the like of which I have never seen before, is believed to be a tuberculoma of the retina: D. W., aged eleven, was brought on November 16, 1915, for symptoms of asthenopia, interfering with comfortable attendance upon school, etc., which was due to refractive error in seeing of left eye. The right eye was discovered to have only perception of light, with ability to partially count fingers at half a foot. A soft, globular, perfectly white tumor, apparently between the macula and optic nerve, neither of which was recognizable, occupied a large portion of the fundus. It did not seem to have any limiting membrane, but looked like steam condensed on a cold day into pure white vapor. His father was advised to permit a trial injection to see if it would diminish the tumor, or at least restrain its growth and permit safe retention of globe, with possibly some restora-

tion of peripheral, but not central, vision; and he consented to the same. The boy bore the pain bravely, but suffered much from nausea and vomiting from the morphin, returning home a good many miles in a huckster's wagon on the afternoon of the same day. He returned on December 23, vision equaling fingers at three feet on temporal side. He mustered up courage to submit to a second injection, which pained severely for nearly half an hour, followed, as before, by nausea and vomiting from the morphin, which lasted several hours. He returned on March 9, with vision equal to fingers at six feet. Tumor possibly absorbing. He made no protest against a repetition of the injection, which this time had also the guiacol water, until he climbed on the table, when his courage failed him, at which no one can wonder. Had there been facilities and helpers at hand, a general anæsthetic would have been given; but as they were not, the injection was made in spite of considerable struggling, which is only mentioned to emphasize how easy it is when a patient is quiet. The patient is now taking the mixture of mercury with chalk, etc., as elsewhere described. It will be several months before the final outcome will be known; but the progress to date is equally satisfactory with that of a large conglobate tuberculoma of the choroid treated some years ago in a woman forty years of age and reported in a former paper, in which the tumor ultimately absorbed, leaving a large cicatrix at its site and quite a useful amount of vision.

A state of affairs frequently encountered in varying degrees of severity is illustrated in the following case: M. J., aged twenty-six, came on November 18, 1915, with all of the cornea of the right eye, except the upper circle beyond the pupil, destroyed by a necrotic ulcer, due to infection of a slight scratch of the cornea made by fuzz off weeds in a field with the discharge from a chronic suppurating tear sac. The other eye was blind, except for a spot around the fixation point so small that he could not go on the street without an attendant to guide him. As his hope of sight hung on the ability to preserve the little rim of the cornea for future iridectomy, a method often resorted to, of combining several procedures to get the surest possible results, was adopted. After cocainizing the eye, the lacrimal canaliculi were split into the sac. Swabs dampened in adrenalin and covered with pulverized cocaine were then held in the sac for several minutes, after which the sac was completely destroyed by a round electro-cautery point, rotated in the body of the sac, and also its

portion above the commissure of the lids designated as the "cupola" of the sac, which is also my method of obliterating suppurating tear sacs under ordinary circumstances. The ulcer was then freely burned up to sound tissue with the same cautery, and the routine subconjunctival injection made. Notwithstanding this sounds rough, he suffered little pain by the operation, and none after; whereas he had suffered greatly for a good many days and nights previously. Argyrol in 25 per cent. solution was given for home use, and the pouch where the sac had been was swabbed out with the same at each visit until the cavity filled up. Healing proceeded as fast as possible; and as certain parties were anxious for him to go home, he left on December 7 with the cornea nearly cicatrized. As the eye had a tendency to hardness, he was given an eserin solution to use at home. The hope of saving the peripheral cornea was attained; whether the subsequent efforts to restore vision by an optical iridectomy when he returns in the spring will be a success, remains yet to be seen.

A case of double syphilitic optic neuritis is the following: Woman, aged about thirty-five, came on December 27, 1915, with sight rapidly failing in both eyes, due to optic neuritis, with some vitreous haze in both eyes. She had luetic sore throat and mouth. For certain non-medical reasons treatment was not started until the next visit, on December 30, during which short interval vision had declined in the right eye from 20/75 to 6/150, no Jaeger, and the left eye from 20/50 to 12/150, Jaeger No. 16. Injection was given in the right eye, followed by the usual pain and an unusual morphin nausea. January 4: R. V.=20/100, J. 14, L. V. 20/40, J. 12—an instance frequently observed of beneficial effect on the other eye in bilateral affections. January 11: L. E. V.=20/40, J. 8. Same injection given left eye. January 19: R. V. 20/75, J. 6, L. V. 20/50, J. 1. January 27: Each 20/40. General treatment by her physician had not been promptly instituted for non-medical reasons, but was now under way. February 28: R. V. 20/75+, J. 2 — L. V. 20/40 — J. 1. March 14: R. V. 20/40 S. + 40 J. 1 — O. D. hazy; fine haze around cornea. Fearing iritis, the pupil was kept dilated by atropine; L. V. 20/40 S. + 40, J. 1. Fundus clear; mouth healing. March 21: R. V. 20/50 with S. + 40, J. 1. — L. V. 20/30 — J. 1. Feels good. The apparent inconsistency between far and near vision at varying times seems to go with some of these retinal or nerve diseases. This patient being nearly a total illiterate, also does not give the fullest measure of vision on letter tests.

A similar case, limited to the right eye in a man, aged twenty-two, following close after an iritis from which a perfect recovery was made, was given the injection on March 15, 1916, vision being 20/100+, J.14, with + 4.0, J. 6. He did not suffer any pain or morphin nausea, and stated that his eye merely felt queer from the swelling. It is quite often that patients say the pain is not worth mentioning, as in a recent case of punctate keratitis in a man who had been using local and constitutional treatment for about two months with no apparent benefit. It requires from three days to a week for all swelling to leave and about a month for all bruised appearances at the site of injection to leave. Accordingly, such cases as require more than one injection are seldom given them at closer intervals than one month. In the above case on March 20 far vision was almost the same, near vision decidedly reduced, and vitreous haze increased. but on March 25 far vision was slightly raised and near vision with S. + 4.0, Jaeger No. 1, and vitreus almost entirely clear. Atropia and dionin are used in the eye at each visit, and the patient is taking specific treatment from his physician. Last seen on March 31: Vitreus quite clear and vision 20/75 very clear; Jaeger No. 1, with S. + 4.0.

In conclusion, my wish to not be overenthusiastic in the use of the treatment advocated in this paper has caused me to abstain from it in several instances where it was believed the exigencies of the situation did not demand it, and it was revealed too late that it should have been done by the loss of sight from infection following accidental or intentional penetration of the eyeball; whereas in no case of using it has any resultant harm therefrom been proven.

Addendum, January 19, 1917.

Sequel of cases under treatment when reported.

1. W. C.: This patient showed progressive improvement at weekly visits, the blood gradually absorbing, and no pain or redness developing. May 4: V. = 20/75, S. with +4.0, J. 6. June 7: V. = 20/50, S. with + 4.0, J. 1.—. July 27: V. = 20/25 — J. 1. At end of year: V. =20/25, J. 1. Eye normal in every way, except a few floating strings in vitreus. Patient has for several months been using eyes as though nothing had happened.

2. D. W.: This patient has received no further injections, but has had guiacol carbonate added to the mercury, with chalk, etc., which he has taken about half of the time. The tumor has

gradually disintegrated, and at the last visit recently was almost reduced to level of the surroundings, and has blood vessels coursing over it. Tension is normal, but sight has not returned. Boy is healthy, and makes no complaint.

3. M. J.: On returning in spring, cornea was staphylomatous, and operation considered useless.

4. Woman, aged thirty-five: Soon after report was written, developed iritis, but made perfect recovery. During my absence at meeting where this paper was presented, second eye developed iritis. and as she did not use any atropia in it for a week or more, several adhesions were found when pupil was enlarged; but a good recovery ensued. Vision attained, and has maintained almost a full standard up to the present time.

The young man with monocular syphilitic optic neuritis was given one more injection on May 16, and last seen on June 3, when V. = 20/75, with S. + 4.0 J. 3. He had been drinking a good bit and not living up to rules prescribed. He has since died of what his family reports as blood poisoning, following tonsillitis.

NOTE ON THE USE OF SUBCONJUNCTIVAL THIOSINAMIN INJECTIONS IN A CASE OF RELAPSING VITREUS HÆMORRHAGES.*

By Dr. A. V. Westphal,
LAUSANNE.

Miss A. D., was the first time attacked by a hæmorrhage into the vitreus of the right eye in 1908, when 17 years old. Her father had died a short time before, her mother had died from heart disease.

The patient presents nothing abnormal. All researches made to elucidate the cause of the hæmorrhage were unsuccessful. She had two relapses in the right eye, then came to Lausanne for treatment in April, 1912, after a recent attack had occurred in both eyes. My father noted V. R. E.= fingers at 3 meters; L. E. = fingers at 2 meters.

After a month's treatment which had chiefly consisted of subconjunctival injections of asterol, her V. was in the R. E.= 1/4;

*La Clinique ophthalmologique, November 16.

in the L. E. movements of the fingers only. The L. E. had shown some increase of tension; my father had made a paracentesis and then an iridectomy.

No relapse until the fall of 1915. Miss D. did not return to Lausanne for treatment until February, 1916. I found on February 18th, 1916: R. E. projection bad, detachment of retina, white reflex of detached retina just behind the lens, V.= less than 1/100; L. E. opaque vitreous body, V.=0.06.

The treatment consists of subconjunctival injections of sodium iodide, then sodium chloride 10 per cent., intravenous injections of cyanide of mercury, rest in bed, etc. The right eye is especially taken care of since Miss D. does no longer count on the left eye.

Leaving for military service I handed the patient over to my father who made an Elliot trephining at the end of February. He noted at that time: R. E.= fingers at 1 m., fundus cannot be illuminated. There is certainly a partial detachment, the visual field is restricted excentrically. On April 17th she left the clinic with R. E. V.=1/9; L. E. V.=2/40.

She returned on July 21, 1916, to get another treatment. Her visual acuity is somewhat improved, in the left eye at least: R. E. V.=1/12; L. E. V.=1/12. The backgrounds are with difficulty illuminable.

On account of the opacity of the vitreous bodies I decided to try subconjunctival injections of fibrolysin without ever having heard of this treatment in such eye affections. What I have read about the therapy with fibrolysin or thiosinamin I have only found since then.

Since I could not get the fibrolysin at Lausanne I decided to use thiosinamin, its principal ingredient, and to dissolve it according to the method of Horeau and Michel. A cubic centimeter of the solution contains thiosinamin 0.1, antipyrin 0.0075.

I began by injecting 1-10 cc. of this solution. After the third injection I saw the optic papilla for the first time in the left eye. After the fourth injection the visual acuity in the R. E.=1/12; in the L. E.=1/16. In the fifth injection I used 1½ tenth of a cc.; then I rose to 2, 3 and 4 cc. After the eighth injection, about five weeks after the beginning of this treatment with thiosinamin the visual acuity of the right eye remained almost the same, varying from 1/8 to 1/10. The visual acuity of the L. E.=3/34, a week after the fifth injection =1/4. The fundus is seen through a mist, the papilla is distinguished, as also the details of the blood vessels. The projection of the right eye is normal.

I have made the injections always by penetrating under the conjunctiva almost to the equator of the globe. Three hours after the first four injections the patient suffered from headache and she had a heavy head the next morning; very little pain around the eyes.

Three or four milligrammes of thiosinamin in one injection produced a conjunctival œdema and swelling of the eyelids; four milligrammes moreover caused at the penetration point of the needle a condition of the conjunctiva similar to necrosis.

From this single case I have for myself drawn the following conclusions: More than two injections per week do not seem to hasten the process of absorption. Two milligrammes of thiosinamin for each injection seems to give the best results. A stronger concentration irritates the eye and gives no additional benefits. That the right eye has not profited from the treatment as the left eye is due to the detachment of the retina seen in February, 1916.

This therapy may be open to criticism on two points:

1. Since the left eye had not been treated since 1912 any kind of subconjunctival injection might have produced the same result by the afflux of the blood and the increase in leucocytes.

2. I have used a mixture of thiosinamin and antipyrin; could antipyrin alone have produced a similar result?

I have since found that Salva in 1909 (*Soc. franç. d'Opht.*, Vol. XXVI, p. 239), then Thilliez in 1910 (*Soc. franç. d'Opht.*, Vol. XXVII, p. 529) had used fibrolysin in intramuscular injections in cases of hæmorrhage into the vitreous body. The latter used at the same time also subconjunctival injections, and had obtained a good result as regards the clearing up of the vitreous body. Ollendorf (*Zeitschr. f. Augenhlk.*, July, 1910), also, injected fibrolysin under the conjunctiva. The first injection is said to have been very painful. In one case of considerable opacities in the vitreus the visual acuity rose from 5/36 to 5/18.

It would be interesting to know if A. W. Ormond, whose work is cited by Darier (Intraocular hæmorrhages and their treatment, *La Clinique ophtalmologique*, September, 1916), has himself employed the thiosinamin in subconjunctival injections or whether I am the only one to have done so, and what were his results.

A CASE OF MELANO-SARCOMA OF THE CHOROID WHICH WAS NEGATIVE TO TRANSILLUMINATION.

By C. A. Clapp, M.D.,
BALTIMORE, MD.

Mr. F. H. N., aet. 58, consulted us first upon October 6, 1910, complaining of the sensation of drooping of the right upper lid.

V=O. D. c+1.⊃+1., cyl. ax. 180°=20/15; O. S. c+1.50⊃+.25, cyl. ax. 180°=20/15.

The pupils were dilated and no lesion was seen. The patient returned on November 15, 1910, stating that his vision in the right eye was defective. Vision with correction was for O.D. 20/70; O.S. 20/15.

Examination revealed a detachment of the retina in the upper nasal quadrant. Tension normal.

December 8, 1910.—A note was made that the detachment had extended forward to the ciliary body with a marked increase of pigment. The detachment was sacculated or cystic in appearance.

January 14, 1911.—Detachment still larger and transillumination shows no dullness.

The case was exhibited at the February meeting of the Ophthalmological Section of the Medical Chirurgical Faculty (Baltimore Eye and Ear Hospital), where transillumination was shown and in the discussion Dr. Randolph remarked upon the value of this test as otherwise the eye might be sacrificed.

The field shows temporal contraction to 20 degrees. As the detachment remained fixed it was determined to try and withdraw some of the subretinal fluid, which was done on March 17, 1911, at the Baltimore Eye and Ear Hospital, by first using a rather large caliber hypodermic needle with suction, but very little fluid was obtained; a Graefe knife was then used to puncture the sclerotic. This was followed by the removal of a considerable quantity of bloody fluid, which showed large epitheloid cells under oil immersion. The detachment receded about one-fourth in extent.

Following the operation there occurred a decided reaction, with pain, which required morphine to control and with an exudate into the vitreous body which obscured the fundus reflex.

May 1, 1911.—Fundus reflex present, with peculiar exudate

extending into the vitreous body from the region of the scleral puncture. Patient counts fingers at 1 foot.

The patient was not seen again until August 22, 1911, at which time the lens was becoming opaque with shallow anterior chamber and tension of plus one. Bulging at the site of the puncture the size of a split pea.

August 28, 1911.—Acute secondary glaucoma with inflammatory reaction and much pain. Miotics were ordered and enucleation was advised, which was accepted and performed August 29, 1911. The eye was easily removed and there was no visible extension into the orbital tissues.

November 1, 1911.—Dr. Keown reports metastasis in the liver with marked enlargement, and severe pain. Patient died December 5, 1911.

MACROSCOPICAL EXAMINATION.

Marked enlargement of the vessels of the sclerotic at the nasal side. The eye shows central opacities in lens with a large detachment of the retina pressing forward upon the lens. Eye sectioned horizontally shows a large pigmented tumor on the nasal side extending from the disc to the ciliary region and inward to the middle line. Its anterior portion is not pigmented for about 3 mm., the rest being pigmented, especially so near the sclerotic and posteriorly near the optic nerve.

MICROSCOPIC EXAMINATION.

Low power shows large growth in the choroid at the nasal side, extending from within 3 mm. of the optic nerve at the back, forward involving the ciliary body, and pressing the iris slightly forward. Posteriorly there is an exudate between the growth and retina, but anteriorly the retina is apparently attached to the growth. No apparent change in the cornea with a possible exception of some œdema of the epithelial layer. The anterior chamber is shallow; the iris shows some infiltration over the region where the ciliary body is involved. The growth shows a mottled appearance with large areas filled with red blood corpuscles. Anteriorly it presents areas of pigmentation, but rather few in number; the growth seems to be divided into longitudinal areas, extending from the sclerotic towards the center of the vitreous body; posteriorly large amount of pigment cells with more or less round or oval divisions. A high power shows the growth made up of irregular cells consisting of approximately a

half nucleus and half protoplasm, some of the nuclei being round and some oval in shape, and some apparently having a nucleolus; the divisions being made up chiefly of areas of connective tissue. The pigmentation consists of cells of about the size of the tumor cells; no tumor cells are seen in the ciliary body. Diagnosis: Melano-sarcoma of the choroid.

The most probable explanation for the transillumination being negative is that the light did not get far enough back to catch the tumor, but did catch the detachment which preceded the growth forward from the posterior quadrant. More recently some observers have been making an incision in the conjunctiva and carrying a small light backwards towards the optic nerve in order to find the dark areas. I think this would have proved valuable in this case.

The most important point is whether there was not a swelling in the posterior nasal quadrant on October 6, 1910, when he first consulted us; as it was, the vision became lowered and a detachment was seen to be present only five weeks later. It is possible for the detachment to be the initial demonstrable lesion, but I fear a primary elevation was overlooked.

ANNOUNCEMENT.

THE AMERICAN BOARD FOR OPHTHALMIC EXAMINATIONS; ITS ORIGIN, AIMS AND METHODS.

The Sources of Its Authority.—

In 1913 the American Ophthalmological Society, the Section on Ophthalmology of the American Medical Association, and the American Academy of Ophthalmology and Oto-Laryngology, appointed committees to report on Ophthalmic Education.

In 1914 these committees recommended that medical schools of the first class establish graduate courses in Ophthalmology leading up to an appropriate degree, and that these courses represent not less than two years of systematic work, subsequent to taking the degree of M.D. There was unanimous agreement as to the

need of systematized and standardized training of those who are to practice Ophthalmology, but it was clear that the number who would take the complete course leading up to such a degree would, in the near future, be small. Moreover, it would not solve the problem of differentiating, in some degree, between the competent and the incompetent among those now in practice in Ophthalmology. Accordingly the committees were continued.

In 1916 they made further recommendations, as a result of which a joint board was created.

In 1916, after much preliminary work, this was organized as the American Board for Ophthalmic Examinations. It consists of nine members, three from each of the above-mentioned societies, chosen in the same manner as their presiding officers are chosen. One is elected each year by each of the societies represented on the Board, for three years. No one can serve over six years.

Three Chief Functions of the Board.—

1st. To establish standards of fitness to practice Ophthalmology;

2nd. To investigate and prepare lists of medical schools, hospitals and private instructors recognized as competent to give the required instruction in Ophthalmology.

3rd. To arrange, control and supervise examinations to test the preparation of those who desire to practice Ophthalmology, and to confer a certificate upon those who meet the standards established.

No Degrees.—

It is apparent that the conferring of a degree is left in the hands of the universities, where it belongs, and that the Board makes no attempt to control the practice of Ophthalmology by any license or legal regulation whatever. It simply aims to establish a standard of fitness to practice Ophthalmology, and to certificate any who voluntarily apply and satisfy the Board of their fitness.

Why Apply for a Certificate?—

What value will this certificate have?

The American Ophthalmological Society and the American Acadamy of Ophthalmology and Oto-Laryngology have voted

that after 1920 they shall require every applicant for membership to possess the certificate of the Board, unless the applicant shall possess a degree in Ophthalmology conferred by a university recognized by them.

The American College of Surgeons: The Regents of the American College of Surgeons has appointed an Ophthalmic Credentials Committee to pass upon the professional qualifications of Ophthalmologists who may be otherwise acceptable to the College. The personnel of that committee is identical with that of our Board. Thus, those who pass the examinations given by this Board, if otherwise acceptable, may be not only certificated by the Board but also accepted as members of the American College of Surgeons.

Other important societies will doubtless follow the example of these influential organizations. Moreover, there is reason to believe that the certificate of the Board is likely to be required of candidates for appointments in many and various important positions; hospital trustees and other laymen being glad to avail themselves of this means of judging the fitness of candidates for positions under their control. Lastly, it is expected that the medical public and the lay public will learn to discriminate better between those who are well fitted and those who are not, and will be influenced by the certificate of the Board in arriving at their conclusions.

What will be the attitude of the older men with reputations already established as well fitted and competent to practice Ophthalmology? While such men may not require the prestige indicated by such a certificate, it is hoped that many of them will apply for the certificate as a means of showing their approval of the movement to elevate the standards of Ophthalmic training, and to draw the line more definitely between the fit and unfit. They will not be obliged to undergo needless and irksome examinations.

Point of View of the Examiners.—

While the examinations are designed to test the candidate's fitness to practice Ophthalmology, and will be conducted in a searching and thorough manner, it will be the aim of the examiners to be broadminded and fairminded, avoiding on the one hand an unduly exacting standard, above present available facilities for preparation to practice Ophthalmology, and on the other

hand, a laxity which would defeat the whole purpose. Thus an older practitioner may no longer have at his fingers' ends details of anatomy, physiology, optics, pathology, etc., which he may once have known, yet his grasp of the science and art of Ophthalmology and his fitness and competence to practice, may be of a high order, as shown by his ability to examine patients, make use of instruments of precision, detect significant conditions, draw correct inferences, make intelligent and timely use of laboratory and other workers, discriminate between the essential and the unimportant, decide on judicious and effective treatment, and make sagacious prognoses.

On the other hand, to expect and demand of the recent graduate the mature, well-balanced judgment and sagacity of the older practitioner would be equally unfair. The examinations will be adapted to both classes.

This movement is undertaken for the purpose of raising the standard of Ophthalmology. Whenever candidates fail to pass the examination, it will be the desire of the Board to induce such men to make an effort to overcome their deficiencies and the Board will gladly (when requested) make suggestions as to what courses should be pursued by such candidates to enable them to establish their fitness.

In apportioning credits under the different subdivisions of the examinations the committee allow themselves some latitude, but in a general way it may be said that the practical examination counts for more than the case reports and written examination combined.

Some Applicants are Passed on Their Records.—

One of the most important decisions of the Board, and one on which unanimous agreement was reached, was this:

In some cases the applicant's professional record is such as to give him a national reputation, or pre-eminence in his community. This fact, duly investigated and considered, may furnish ample evidence to satisfy the examiners that the applicant is well fitted to practice Ophthalmology. Such applicants for the certificate will be "passed on their records" without being subjected to further examinations.

Wording of the Certificate.—

The American Board of Ophthalmic Examinations hereby certifies that ....., graduate in Medicine of the ....., has pursued an accepted course of graduate study and clinical work; and has successfully passed the examinations in Ophthalmology conducted under the authority of this Board.

....., 19..... Chairman....., Secretary.....

(Signatures of the Board)

Applications must be made on special blanks supplied by the Secretary, Dr. Frank C. Todd, 506 Donaldson Building, Minneapolis, Minn. The fee is $25.

Applications must be made three months before the date of the examination, and must be accompanied by a signed photograph of the applicant, and a bank draft or money order for the examination fee.

If the applicant is not admitted to examination, the fee will be returned. If he takes the examination and fails, he will be admitted to a second examination within three years, without additional fee, but must give sixty days' notice of his intention to appear for re-examination. A candidate may file his application and postpone his examination until the Board holds an examination within a convenient distance of his home.

Examinations will be held annually at or near the time and place of meeting of the American Medical Association, and at other times and places at the discretion of the Board, depending on the number of applications from any region.

It is purposed to hold examinations in seveal cities throughout the United States, and it is expected that the next examinations will be offered immediately following the June meeting of the A. M. A. The exact dates will be announced later.

Applications for the forthcoming examination to be held in New York City, June 7th, 8th and 9th, 1917, will be acted upon if *received before April* 1.

The requirements provide that the applications must be received three months before date of examination and this exception is made only for the forthcoming examination, because the circulars of information, owing to unavoidable circumstances, could not be gotten out early enough to allow of sufficient time.

For application blanks, address Dr. Frank C. Todd, 506 Donanldson Building, Minneapolis, Minn.

ABSTRACTS FROM MEDICAL LITERATURE.

By W. F. Hardy, M.D.,

St. Louis, Mo.

A RESUME OF SIX CASES OF BLASTOMYCETIC INFECTION OF THE EYELIDS.

It is unusual for us to have the opportunity of observing a case of blastomycosis of the eyelids. Six such cases have been seen and studied in Memphis. Fagin, of Memphis (*Memphis Medical Monthly,* December, 1915), discusses these cases. Infection with the blastomycete, a budding yeast-like fungus, may produce a local lesion or a general infection. Locally the fungus usually selects the skin. Mucous membranes and especially that of the eyes, seem to be immune. In the most severe eye cases the skin around the eye has been destroyed, but the conjunctiva showed no signs of attack except from exposure, the result of ectropion. Twenty-five per cent. of all skin lesions are found to begin in the region of the eyelids, at the inner or outer canthus. Once established the infection gradually spreads to the surrounding skin. Gilchrist is credited with first having called attention to this disease in 1894. The first lesion is usually a papule soon changed to a pustule and then followed by peripheral extension. The growth shows itself as irregular elevations between which pus oozes, especially under pressure. It generally heals at the centre and extends at the periphery. The mass is composed of miliary abscesses. Clinically it may resemble epithelioma, carcinoma, syphilis or tuberculosis. The finding of the organism clears up the diagnosis. The treatment consists of potassium iodide internally and the application of X-rays locally. The combined treatment is very effective. As much as 100 drops of KI are given three times a day and as many as twenty X-ray exposures are given. These latter extend over a period of months. The following concise interesting facts arranged in the manner of conclusions are given regarding blastomycete infection.

(1) Gilchrist in 1894 found the organism in this disease. He called the organism a "blastomycete" and named the skin infection which was caused by this blastomycete, "blastomycetic dermatitis." (2) This organism, which is a yeast-like fungus, usually selects the skin. Yet, as already stated, lesions of the lungs,

kidney, liver, bone, etc., have been described. Only one instance in which a mucous membrane was affected, was found in the literature. (3) Twenty-five per cent. of the skin lesions are found in the region of the eyelids, but the conjunctiva remains unaffected, and suffers only from exposure, while in cancer the conjunctiva sloughs away, too. (4) It seems to be entirely an American disease. No cases as yet are reported from abroad. The majority of the cases occurred in the Mississippi Valley and were studied and reported in Chicago. Foreign born people who have it, receive the infection after immigration to this country. (5) We are indebted to Bevan, who first observed. and to Nevine, Hyde and Montgomery, who have substantiated the fact, that the iodides are almost a specific for blastomycetic dermatitis. We are told by Bevan to increase the dose of potassium iodide if necessary to 150 grains three times a day. X-ray treatment is beneficial. Recently a case has been reported as cured by injections of salvarsan.

THE USES OF ETHYLHYDROCUPREIN IN DISEASES OF THE EYE.

Zentmayer, of Philadelphia (*N. Y. Med. Jour.*, February 24, 1917), has reviewed the literature concerning the uses of ethylhydrocuprein in eye diseases. The experimental evidence and clinical uses are considered. Its chief use as is well known has been in combating pneumoccocal infections comprising pneumoccal conjunctivitis, dacryocystitis and ulcer of the cornea. The hydrochloride in a one or two per cent. solution is generally employed, but some few have used the basic form made up into a salve. The drug has also been used in streptococcal conjunctivitis, vernal catarrh, trachoma, blepharospasm and photophobia with far from brilliant success. The author quotes Oliver's warning that rapid destruction of the cornea may follow the use of the drug. Care also must be taken in injecting the lacrimal sac because of the toxicity of the drug. Zentmayer gives a synopsis of eight cases treated by himself, but it appears that other measures were also employed, and whatever measure of success was obtained cannot in full be credited to ethylhydrocuprein. His conclusions are that ethylhydrocuprein is a valuable aid in the treatment of pneumococcal ulcers of the cornea, especially if the treatment is begun before active destruction has occurred. Almost all cases of this type of corneal ulceration under the

action of this drug manifested a shorter and conspicuously more favorable course than did those dealt with in earlier days by the well recognized methods formerly in use. The evidence at hand as to its value in diseases of the cornea and conjunctiva due to other organisms than the pneumococcus or to other causes, is insufficient on which to base a conclusion.

It has seemed to the reviewer that there has been a marked falling off of enthusiasm for and faith in ethylhydrocuprein due to the very mediocre results obtained with it and the necessity for using supplementary measures in dealing with pneumococcal ulcers.

RADIOGRAPHY OF THE EYE AND ORBIT.

Dixon, of New York, has an article (*N. Y. State Jour of Med.*, February, 1917) on the subject of radiography of the eye and orbit. Radiography of these regions he says cannot be overestimated. In accidental injuries this should be done. It is remarkable, where this method is a routine measure, the frequency with which foreign bodies are found when nearly all other diagnostic signs are against it. A large variety of accidents are enumerated as causes of foreign bodies in the eyes and orbit. The smallest particles of iron or steel, lead, copper or brass, all metals except small pieces of aluminum, can easily be shown. Stone and glass are also easily shown, but small and even moderately large pieces of wood cannot be detected by X-rays unless painted or heavily varnished. Calcareous deposits of the lens and bone deposits of the choroid are clearly shown. It makes little difference what localizing method is used, provided the operator is thoroughly familiar with that method. All methods of value are based on the same principle, i.e., triangulation as first employed by Sweet. Dixon prefers his own apparatus and Hulen's method of platting. The technique has been employed for eleven years at the New York Eye and Ear Infirmary with entirely satisfactory results. The last detailed description of the method was published in Weeks' "Diseases of the Eye." A number of case reports, unusual in character, are given. A single plate should never be relied upon. A foreign body may be simulated by a peculiar arrangement of the septa of the ethmoidal cells when the picture is taken at a particular angle. A defect in a plate also may be mistaken for a minute foreign body. Prolapsed iris does not always mean that the foreign body has been large

and foreign bodies are frequently found in the presence of prolapsed iris. The statement of the patient is often of little value. A history as to the nature of the foreign body is invaluable. Minute particles of lead and iron yield strong shadows, but glass throws a weak one and the tube used for glass should therefore be much lower than one used for iron. As a rule glass does not travel far into the globe and generally presents its edge to the source of the ray, making localization easier. Failure to find a wound of entrance is no proof that the globe does not harbor a foreign body. Siderosis is good evidence that a piece of iron is the cause, yet this is occasionally overlooked. Cataract in a young person is generally due to injury and frequently a foreign body is found, although an injury is vigorously denied. A skiagraph may prevent the overlooking of a second foreign body in the eye. Failure to secure the foreign body does not mean that it is not present. A shadow cast may be of good intensity and form and be the shadow of iron rust only. A foreign body may be lost either inside or outside the orbit. It may be non-magnetic or so slightly so as to be unaffected by the magnet.

Fixation of the vision during the exposure is necessary to success; a small foreign body might otherwise be missed. Radiographs do not show intraocular tumors but often reveal the size and location of orbital growths. The skiagraphic differential points between a sinus affection and orbital trouble are discussed. Fractures about the orbit except at the outer margins are most difficult. In summing up Dixon says that it has been proven beyond a doubt that localization of foreign bodies is not only useful in the majority of cases, but imperative if the surgeon would obtain the best results from his efforts, and that valuable information may be obtained as to the presence of orbital tumors. Possibly with better technique we may soon be able to obtain information concerning fractures in the walls of the orbit involving the optic foramina, which now is largely conjectural.